



# Goddard Procedures and Guidelines

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APPROVED BY Signature: Original Signed by  
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TITLE: Director

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**Responsible Office: Code 400/Flight Projects Directorate**

**Title: Program Management**

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## PREFACE

### P1. PURPOSE

This procedure establishes the process for management of GSFC Provide Aerospace Products and Capabilities (PAPAC) Programs.

### P2. APPLICABILITY

This procedure applies to all GSFC PAPAC Programs.

### P3. AUTHORITY

NPD 7120.4 – NASA Program/Project Management

### P4. REFERENCES

- a. NPG 7120.5 NASA Program and Project Management Processes and Requirements
- b. NPG 1000.2 NASA Strategic Management Handbook
- c. GPG 1060.2 Management Review and Reporting for Programs and Projects
- d. GPG 1310.1 Customer Commitments and Review
- e. GPG 1440.7 Control of Quality Records
- f. GPG 8730.4 Quality System

### P5. CANCELLATION

GPG 7120.1, Program Management

### P6. RECORDS

Quality Record Title	Record Custodian	Retention
Program Plan	Program Office. If disestablished, then Directorate Office.	<u>NRRS 1/22A</u> (Permanent. Retire to FRC when 5 years old in 5-year blocks. Transfer to NARA when 10 years old.)

## PROCEDURE

### 1. DEFINITIONS

- a. Announcement of Opportunity (AO) – An AO is a procurement vehicle used by NASA Headquarters Enterprise Offices to solicit and select Space and Earth Science investigations for space flight. The AO is a competitive procurement process open to all elements of the scientific community.
- b. Enterprise – One of four strategic business areas through which NASA implements missions and communicates with customers.
- c. Program Integration Manager (PIM) – A manager in the Associate Director's Office (ADO) providing Space and Earth science programs and projects with multi-program level integration, strategic planning, review and reporting, and advocacy support for customers and stakeholders.
- d. Mission – A task or group of objectives assigned to an individual, group or organizational entity.
- e. Objective Evidence – Qualitative or quantitative information, records, or statements of fact pertaining to the quality of an item or service, or to the existence and implementation of a quality system element, which is based on observation, measurement, or test and which can be verified.
- f. PAPAC – Abbreviation for Provide Aerospace Products and Capabilities (PAPAC), one of the four critical crosscutting processes defined in the NASA Strategic Management Handbook.
- g. Process – The term, as used in this document, refers specifically to, and is synonymous with, the PAPAC processes defined in NASA Procedures and Guidelines (NPG) 7120.5.
- h. Product – Any deliverable(s) subject to the Goddard Quality Management System (QMS), including all hardware, software, services, mission data, science, and technology deliverable to customers.
- i. Program – An activity within an Enterprise having defined goals, objectives, requirements, and funding and consisting of one or more projects, reporting to the NASA Program Management Council (PMC), unless delegated to a NASA Governing PMC.
- j. Program Commitment Agreement (PCA) – The contract-like agreement between the NASA Administrator and the cognizant Enterprise Associate Administrator (EAA) for implementation of a program.
- k. Program Plan – The document that establishes the overall baseline for implementation as well as the agreements among the cognizant EAA, Center Director and Program Manager. It is the customer agreement and the initial quality plan for the program and documents, among other elements, plans for tailoring of the program's processes.
- l. Project – An activity designated by a Program and characterized as having defined goals, objectives, requirements, Life Cycle Costs (LCC's), a beginning, and an end. Selected aerospace products can be

further designated as Goddard projects when recommended by a sponsoring directorate and approved by the Center Director or his/her designee. For the Goddard QMS, a project is “a set of management, administrative, and technical activities leading to the delivery of a Center product in response to customer requirements (see Goddard Procedures and Guidelines (GPG) 1310.1) and in accordance with Agency and GSFC requirements.” (Also see NPG 7100.5, NPG 7120.5, and GPG 8730.3).

m. Project Plan – A document describing the implementation of a Project within a Program, prepared and maintained by the Project. The Project Plan is the project’s customer agreement and the initial quality plan, approved by the Project Manager, Program Manager, and Center Director. Tailoring decisions are documented in the Project Plan.

n. Tailoring – The adaptation of the PAPAC processes and requirements to be consistent with Program and Project characteristics, such as size, complexity, cost, risk, and priority. Tailoring of Goddard Directives normally results in a waiver (see GPG 8730.3). (See Paragraph 2.3—Program Management Functions).

o. Theme – The mission of one or more programs focused to form a major scientific objective of an Enterprise.

p. Quality Record – A document that provides objective evidence of the extent of the fulfillment of the requirements for quality of a product or the effectiveness of the operation of a quality system element. Quality records can consist of paper, microfilm, magnetic/electronic media (including software), microfiche, x-ray, or optical media. This includes records that verify product compliance to requirements, records delivered from contractors, and records that verify the effectiveness of the QMS. (See GPG 1440.7)

## **2.0 PROGRAM IMPLEMENTATION**

### **2.1 RESPONSIBILITY**

a. The Center Director is responsible to initiate Strategic Implementation Plans (NPG 1000.2), foster advanced concept studies, concur in appropriate formulation authorizations, coordinate and appoint a Program Manager with appropriate authority and responsibility, approve or concur in the Program Plans and oversee Program Formulation, Implementation, and Evaluation.

b. The Deputy Center Director is delegated the responsibility and authority by the Center Director to direct the Implementation Subprocess of programs and projects and is accountable to the Center Director and the Enterprise Associate Administrator (EAA) for the programs and projects. The Deputy Center Director directs the Program Implementation Subprocesses and delegates appropriate authority and responsibility to a Program Manager.

c. The Associate Center Director (ACD) is delegated the responsibility and authority by the Center Director to direct the Program Formulation Subprocess (Figure 1) and is accountable to the Center Director and the EAA. He/she delegates appropriate authority and responsibility to a Program Integration

Manager (PIM). The ACD is also responsible for the integration of the Enterprise Programs across the Center and through their life cycle.

d. Program Integration Manager (PIM) – The PIM serves on the staff of the ACD and is responsible to work with the Program Managers or Project Formulation Managers (PFMs), as appropriate, to integrate multi-program support from NASA Headquarters, the science community, and the Center efforts leading to the Formulation and Approval of strategic programs and projects. The PIM is responsible for the coordination and integration of multi-program or project Formulation and Approval activities with the Enterprise, the science community, external partners, and GSFC Management. The Program Integration Manager ensures that the applicable Project Formulation Authorization(s) and Project Formulation Plan(s) are prepared in accordance with applicable Goddard Directives.

e. Senior PIM – The Senior PIM serves the Deputy Center Director and supports the Deputy Center Director for implementation and supports the Associate Director for the integration of the science Enterprise activities across all elements of the Center. The Senior PIM works with the Program Managers to develop cross-program and project policy, acts as a point of contact between the Center and Enterprise Offices for policy and problem resolution, and coordinates the necessary review and reporting of activities with the Center and the appropriate Enterprise Offices as outlined in Reference 3.

f. Space Technology and Advanced Concepts (STAAC) – STAAC is responsible for defining technology requirements, infusing these technologies into new programs and projects, technology transfer to the commercial sector, and developing advanced concepts for the new missions necessary to support the Enterprise programs, projects, and products.

g. The Director of Flight Projects Directorate (FPD) – The Director of FPD is responsible to administer initiation of project Approval and the Implementation Subprocesses. The Director of FPD initiates the Approval Subprocess with the support of the Directors of and the ACD, and administers the subsequent Implementation Subprocess.

h. The Director of Suborbital Projects and Operations (SPO) administers the Formulation, Implementation and Evaluation of programs and projects for which he/she receives a delegation.

i. The Program Manager is responsible for accomplishing all aspects of programs/projects assigned and for effecting a synergistic interface with the Office of the ACD (OACD). The Program Manager is also responsible for the integration of all project objectives and requirements at the program level, preparing or updating the approved PCA and Program Plan, and initiating tailoring of processes and requirements throughout his/her program, and maintaining conformance of the program with Goddard QMS, especially GPG 8730.3 Quality Manual, and GPG 8730.4, Quality System. The Program Manager ensures that the applicable Project formulation authorization(s) and Project formulation Plan(s) are prepared in accordance with applicable Goddard Directives.

The Program Manager is responsible for all aspects of the Program execution including their conformance to the customers technical, cost, and schedule requirements, and the integration of these elements to best meet overall program goals. The expected cost, schedule, technical performance, and planned Program

Implementation are defined in the Program Plan that is progressively updated to reflect the approval of new projects.

The Program Manager is also responsible for the performance of the program staff and team. He/she is responsible for project-specific training that is needed by program personnel in order to do their jobs. The Program Manager is responsible for the performance evaluations of the staff directly assigned to the Program Manager, as well as providing inputs for the performance evaluation of personnel that are assigned to his/her staff in a colocated fashion, if any.

The Program Manager reports Program status to the Goddard PMC.

## **2.2 LIFE CYCLE OF GODDARD PROGRAMS AND PROJECTS**

### **2.2.1 LIFE CYCLE FOR AO-SELECTED PROGRAMS AND PROJECTS**

The life cycle of the AO-driven programs and projects is outlined in Figure 2. This figure also depicts the relationship between the Center and the Enterprise Offices at NASA HQ. The division of responsibilities and duties within the Center through the life cycle of an AO mission is identified in Table 1.

Formulation – The Formulation Subprocess is performed by the Principal Investigator and his/her team of scientists and engineers while preparing a proposal in response to an Announcement of Opportunity. In parallel, the Enterprise Office is preparing to issue an AO soliciting proposals as well as preparing for the peer review leading to the selection of proposals by the Enterprise Associate Administrator. Goddard may perform any one of several roles in the development of the proposals responding to the AO. A Goddard team could lead in the development of a proposal, play a supporting role for a Principal Investigator located elsewhere, or play no role at all.

Approval – The Approval Subprocess is described in the flow chart of Figure 2 and in Table 1. The details of the approval process with respect to NASA HQ vary with the individual AO. Normally the approval process is organized into either a 1-step or a 2-step process.

1-Step Process – P&P are selected for flight and immediately assigned to the Center. A brief definition study is initiated to mature the hardware/software design, to increase the fidelity of the schedule and to finalize the cost estimate. The results of the definition study are reviewed by the Program Office and then the Goddard PMC to confirm that the program or project has achieved sufficient maturity to begin development. The results of the definition study along with the Centers recommendation to proceed into flight hardware development are forwarded to the Headquarters Enterprise Office where final confirmation to proceed is granted.

2-Step Process – A number of projects/missions/investigations (P/MI's) are selected for further study leading to the selection of 1 or 2 (or possibly more) P/MI's for flight. The initially-selected P/ME's perform a more detailed concept study and the results of that concept study are again peer reviewed. As a result of this second review, the number of P/MI's are reduced and the selected P/ME assigned to the Center for definitization leading to implementation.

Program/Project Implementation – When assigned, the responsibility and authority for managing the Implementation at GSFC is delegated to the appropriate Program Office through the Center Director and Deputy Center Director. All Programs and Projects are implemented using processes consistent with NPG 7120.5, NASA Program and Project Management Processes and Requirements. The process tailoring for each project is documented in the Program Plan and the Project Plan. The P&P assigned may include proposals from any segment of the science community including proposals that originated at GSFC. During the Implementation Subprocess, the Enterprise reviews, oversight, and approvals are executed in accordance with Reference 3.

## **2.2.2 LIFE CYCLE FOR STRATEGICALLY-DEFINED PROGRAMS AND PROJECTS**

Strategically-defined P&P are authorized and assigned to the Center by the Headquarters Enterprise Office for Formulation. These P&P are defined in conjunction with the appropriate science community members and usually address specific strategic goals of the Enterprise as normally defined in the Enterprise Strategic Plan.

The program integration support provided to the OACD for strategic P&P is depicted in the attached process flow chart (Figure 3), with functions described in the associated table (Table 2). This support involves the following:

Strategic Planning – The Theme PIM works with the Enterprise Board of Directors during the theme strategic planning process as it relates to:

- Theme science subcommittee
- Theme science and technology roadmap committees
- Government Performance and Results Act (GPRA) metric development for theme
- OSS roadmap convergence meeting for the enterprise strategic plan
- NAS surveys and special panels

The Theme PIM also relates to the Center by:

- Apprising Center scientists and management of strategic planning activities and processes
- Maintaining awareness of:
  - Center-defined advanced mission concepts
  - Theme-related advanced technology
  - GSFC Strategic Implementation Plan and its relation to the Enterprise Strategic Plans

The creation of a new program requires the close interaction of the Headquarters Enterprise Office and the GSFC OACD. These are very important events that may involve the establishment of a new budget for a program with strategically defined projects (e.g., STP and ESSP Project) or a single project program (e.g., GLAST). The creation of new programs provides considerable attention at NASA upper management,

Enterprise, science and user community, industry, Administration and Congressional levels. The longstanding impact of a program requires a very careful and thorough formulation to ensure that:

- The strategic objectives are understood and can be met with the planned resources.
- The process is in place to deal with the new technologies required.



- The widest range of possible business opportunities have been explored.
- The need to create the new program now is compelling.
- Strong interfaces with customers, partners, and stakeholders are developed.

Program Formulation – The program Formulation effort begins officially with the Formulation Authorization (FA) document sent to GSFC from the Headquarters Enterprise Office. Prior to the issuance of the FA, the PIM in the OACD coordinates the expected program Formulation support with Headquarters. This effort ensures a level of understanding between the Enterprise and GSFC that the proposed program, which is supportive of the Enterprise Strategic Plan, is capable of being formulated to become a successful budget initiative.

Following the FA issuance, the Formulation Subprocess begins with enabling activities that are similar to those conducted in the Formulation of a project. The major distinction is the longer life of the program versus a project, which has a distinct beginning and end, and the resulting consideration for the coordinated Formulation, Approval, and Implementation of projects during the life cycle of the program. Subsequently, a program manager is assigned to work closely with the ADO/PIM and GSFC science and engineering personnel to conduct these activities.

The program office and the PIM provide staff support to HQ in the preparation of the AO required for these Strategically Defined missions as requested by HQ with the understanding that the conduct of the AO process is a HQ responsibility.

During the Formulation Subprocess of strategic programs, the PIM is responsible for coordinating and executing theme-based outreach activities. Outreach involves communicating the science and technology goals of the strategic programs to the general public, the media, and government oversight groups (such as the Office of Management and Budget). Outreach materials produced for communication purposes include brochures, videos, technology showcase exhibits, science forum exhibits, press releases, instructional CDs, etc. The PIM also ensures that outreach activities for specific projects related to a science theme are coordinated with the broader strategic outreach effort.

At some point, the determination is made that the range of program options is sufficiently well understood that the Formulation Subprocess can focus on the effort to definitize the program. A program manager is assigned at the beginning of the definitization effort to take responsibility for making program commitments for Approval, Implementation, and Evaluation. The additional support plans required during the approval are similar to those required in formulating a project.

Additionally the tailoring of the management processes of each program is documented in the program plan. Throughout the creation of a new program, the Formulation effort requires a high level of advocacy and a very close coordination with the Headquarters Enterprise Office and the science/user community or customer of the program.

The PIM reports to the governing PMC monthly regarding the status of theme and multiple-program Formulation activities. An annual theme status is also provided for the enterprise office. The PIM integration function relates the Enterprise board of directors and program scientist(s) with the GSFC program manager and project scientist(s). The PIM collaborates with program managers to assure the

GSFC support and interfaces. The PIM also assures that outreach activities are conducted throughout the Formulation Subprocess.

Program Approval – The program Formulation Subprocess for a new program creates the proposed PCA and the Program Plan in accordance with the NPG 7120.5 format. These two documents shall be available and maintained for the Non-Advocate Review (NAR) and ready for signature at the time of the Approval Review. The results of the independent NAR conducted by the Langley Independent Program Assessment Office (IPAO) are presented along with any other program-specified reviews such as SRR's, PDR's, etc. conducted during program Formulation. The Approval Review provides the decision regarding the initiation of program Implementation, or the continuation of program Formulation, and resubmission for Approval at a later date. If necessary, agreements (PCA and Program Plans) shall be modified, reviewed by the governing PMC, and signed by the approving official upon governing PMC recommendations.

Program Implementation – The Implementation of a program is accomplished through its projects (or in some instances, its project). A program which has defined its project(s) proceeds with Approval and Implementation. The Senior PIM provides program level integration to ensure the interfaces. For the Implementation of a program which involves a continuum of projects, the program office conducts concurrent processes where new projects are being Formulated, integrated and advocated for Approval, while approved projects are being Implemented. This concurrent process is presented in Figure 1 and described in Reference 1.0.

The program office represents all projects throughout this life cycle to the governing PMC. The governing PMC may be at HQ or GSFC, if designated by the HQ PMC, and documented in the Program Plan. Often, the first project in a level of effort program is reviewed at the HQ PMC level, while the follow-on projects are delegated to the GSFC PMC. The OACD supports the PMC in their monthly reviews. The OACD also reviews and addresses program integration issues as appropriate and maintains regular communication with Enterprise and GSFC upper management to stabilize the environment for the program manager. The OACD also coordinates the MRR and prepares the Mission Readiness Certification Letter for the Director's signature.

Program/Project Evaluation – The internal review and evaluation of a program and its projects is specified in the Program Plan. During the formulation subprocess, the Enterprise Office can request any of several

reviews that are part of the evaluation subprocess. These reviews can be Non-Advocate Reviews (NAR), Independent Reviews (IR), or any other form of review that the Enterprise Office determines as appropriate and required. Special reviews such as External Independent Readiness Review (EIRR), Independent Annual Review (IAR), or an IR can be directed during Implementations by the EAA as required.

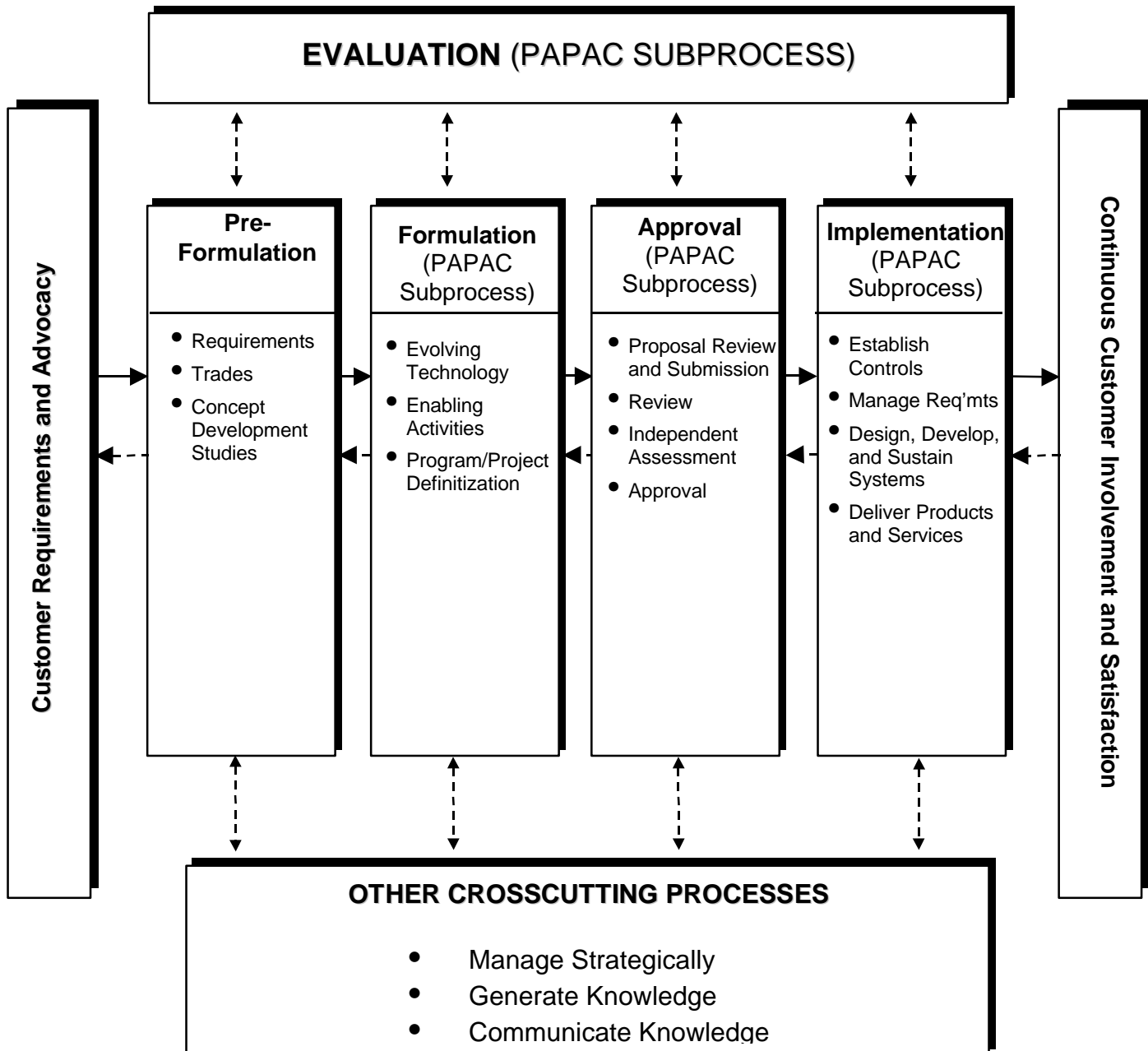
The reviews specified by the program for the projects are also conducted as part of the Evaluation Subprocess. In this regard, the program office is evaluating the performance of the individual projects and presenting monthly status to the governing PMC, while the program office is assisting and stabilizing the environment for the conduct of the projects within the program.



## 2.3 PROGRAM MANAGEMENT FUNCTIONS

During the performance of a program, the Program Manager and his/her team shall comply with the themes and requirements enumerated in NPG 7120.5, and are subject to the requirements of the Goddard directives and procedures defined in the GPG's, Procedures and Guidelines (PG's), and Work Instructions (WI's). Tailored processes can be developed and approved in lower-level QMS directives when the directive containing the tailored process is approved by the approving authority of the (original) directive being tailored. Tailoring for NASA processes and requirements is approved in the Project or Program Plan; tailoring of a Goddard process results in a waiver when the tailored process exceeds the limits of flexibility defined in the applicable directive.

## PROGRAM/PROJECT LIFE CYCLE OVERVIEW Within the Provide Aerospace Products and Capabilities (PAPAC) Process



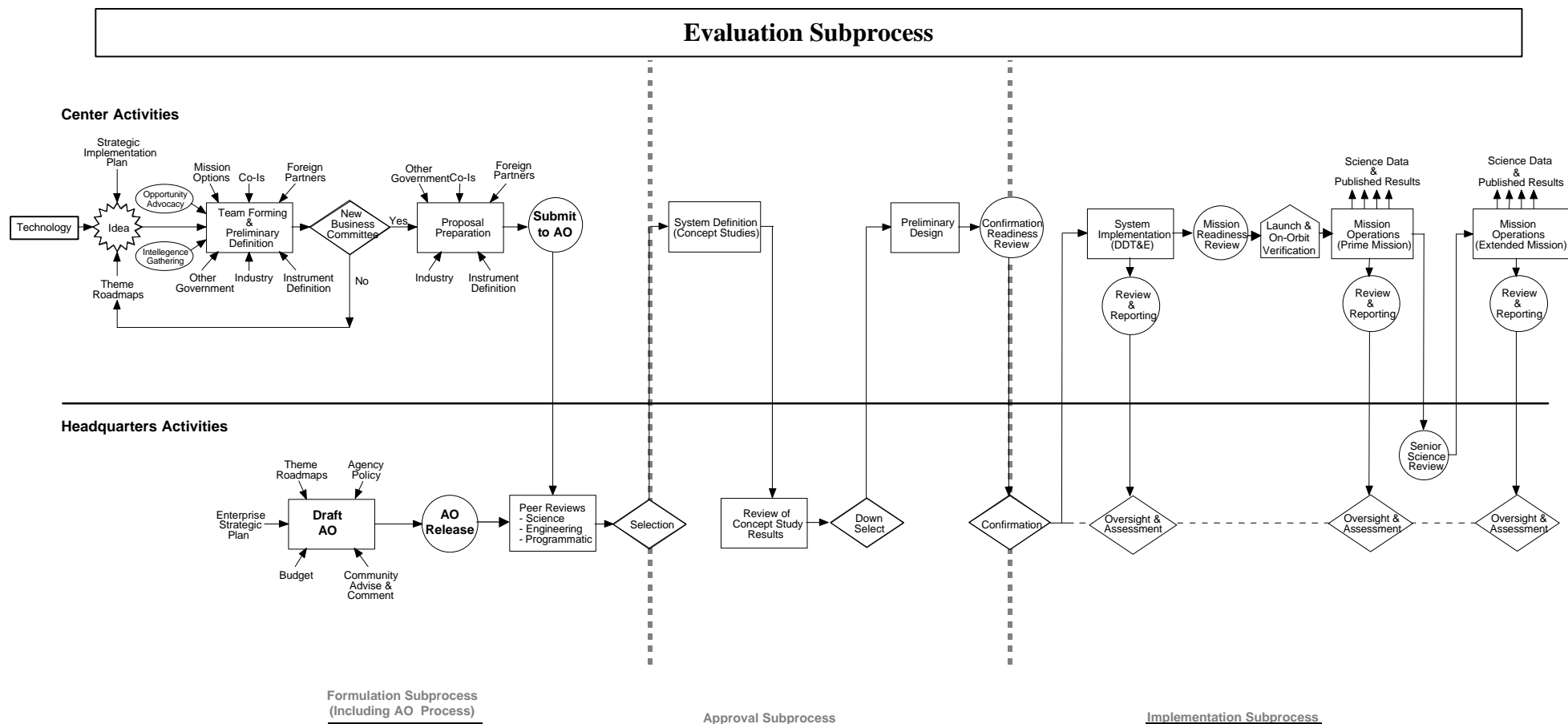
**Figure 1**

**Table 1.**  
**AO Driven Missions**  
**Roles and Responsibilities**

Program Phase	HQ	Center		
		DD/ACD	STAAC/FPD	
AO Driven Missions				
Proposal	<ul style="list-style-type: none"><li>• Prepare and Issue AO</li><li>• Establish Peer Review Process</li><li>• Review and Categorize Proposals</li><li>• Select Proposals and Assign to Center for Implementation</li></ul>	<u>ACD Lead</u> <ul style="list-style-type: none"><li>• Intelligence Gathering<ul style="list-style-type: none"><li>- Advise Center Personnel of AO and NRA opportunities</li><li>- Proactive Opportunity Advocacy</li></ul></li></ul>	<u>700 Lead</u> <ul style="list-style-type: none"><li>• Work with 500 and 600/900 to form Proposal Teams</li><li>• Facilitate Proposers Through NBC</li><li>• Establish Partnerships</li><li>• Support the PI in Preparation and Submission of Proposals</li></ul> <u>400 Support</u> <ul style="list-style-type: none"><li>• Project Manager is selected by the Director of FPD in consultation with the Director of STAAC and with the concurrence of the Center Director</li><li>• Support HQ in Preparation of AO's and AO TMCO Evaluations</li><li>• Support 700 with Proposal Blue/Red Team Reviews, Acquisition Strategy Development, and Budget Development</li></ul>	
Approval/ Confirmation	<ul style="list-style-type: none"><li>• HQ Provide Funding for Concept Studies</li><li>• Review and Evaluate Concept Study Reports</li><li>• Selection of Missions for Implementation or Confirmation of Readiness for Development</li></ul>	<u>ACD/DD Lead</u> <ul style="list-style-type: none"><li>• Accept Selection and Assign to Code 400 for Management</li><li>• Organize Center Confirmation Readiness Review</li></ul>	<u>Non -GSFC Proposal 400 Lead</u> <ul style="list-style-type: none"><li>• Appoint Project Manager</li><li>• Code 600/900 Identify and Appoint Project Scientist</li><li>• Initiate Contracts for Concept Studies</li><li>• Initiate Reviews Leading to Confirmation</li></ul>	<u>GSFC Proposal Transition from 700 to 400 Lead</u> <ul style="list-style-type: none"><li>• Project Management Team Responsible for:<ul style="list-style-type: none"><li>- Initiate Concept Studies</li><li>- Center Participation in Reviews Leading to Selection</li><li>- Finalize Acquisition Strategy</li><li>- Finalize Partnerships</li><li>- Initiate Reviews Leading to Confirmation</li><li>- Develop Procurement Packages</li><li>- PCA/ Program/Project Plan updates</li></ul></li></ul>

**Table 1. Continued**

Program Phase	HQ	Center	
		DD/ACD	STAAC/FPD
AO Driven Missions			
<b>Implementation</b> <ul style="list-style-type: none"><li>Final Design, Development, Test, and Evaluation, Launch, and On-Orbit Verification</li></ul>	<ul style="list-style-type: none"><li>Oversight and Assessment</li><li>Budget guidelines consistent with Assigned Missions</li><li>Review Center Confirmation Recommendations and Confirm Mission for Development</li><li>Review and Accept MRR Letters</li></ul>	<b><u>DD Lead</u></b> <ul style="list-style-type: none"><li>Accept HQ Confirmation</li><li>Provide Additional Guidelines as Required and Integrate Centers Response to Enterprise</li><li>Coordinate Monthly Status Reviews and Address Issues as Appropriate</li><li>Coordinate MRR and Prepare Mission Readiness Certification Letter for Directors Signature</li></ul>	<b><u>400 Lead</u></b> <ul style="list-style-type: none"><li>Initiate Continuous Customer Involvement</li><li>Initiate Contracts and Manage Design and Development</li><li>Develop/Maintain and Advocate Implementation Budget/POP</li><li>Ensure QMS Compliance</li><li>Proceed with Implementation</li><li>Provide Weekly Reports to HQ</li><li>Provide Monthly Status Briefings to Goddard PMC</li><li>Ensure Program/Project and Independent Verification and Validation</li><li>Support MRR</li><li>Launch Mission and Perform On-Orbit Verification</li></ul>
<ul style="list-style-type: none"><li>Operations Activity</li></ul>	<ul style="list-style-type: none"><li>Oversight and Assessment</li><li>Coordinate Senior Reviews to Prioritize Funding for Extended Missions</li></ul>	<b><u>DD Lead</u></b> <ul style="list-style-type: none"><li>Coordinate Monthly Status Reviews and Address Issues as Appropriate</li></ul>	<b><u>400 Lead</u></b> <ul style="list-style-type: none"><li>Monthly Status Reports to Goddard PMC</li><li>Weekly Status Reports to HQ</li></ul>



**Figure 2. Overview of PAPAC Process for AO-Driven Projects**

**Table 2.**  
**Community Defined/Strategic Programs and Projects**  
**Roles and Responsibilities**

Program Phase	HQ	Center	
		DD/ACD	STAAC/FPD
Community Defined/Strategic Missions			
<b>Formulation</b>  • <b>Strategic Planning</b>   			

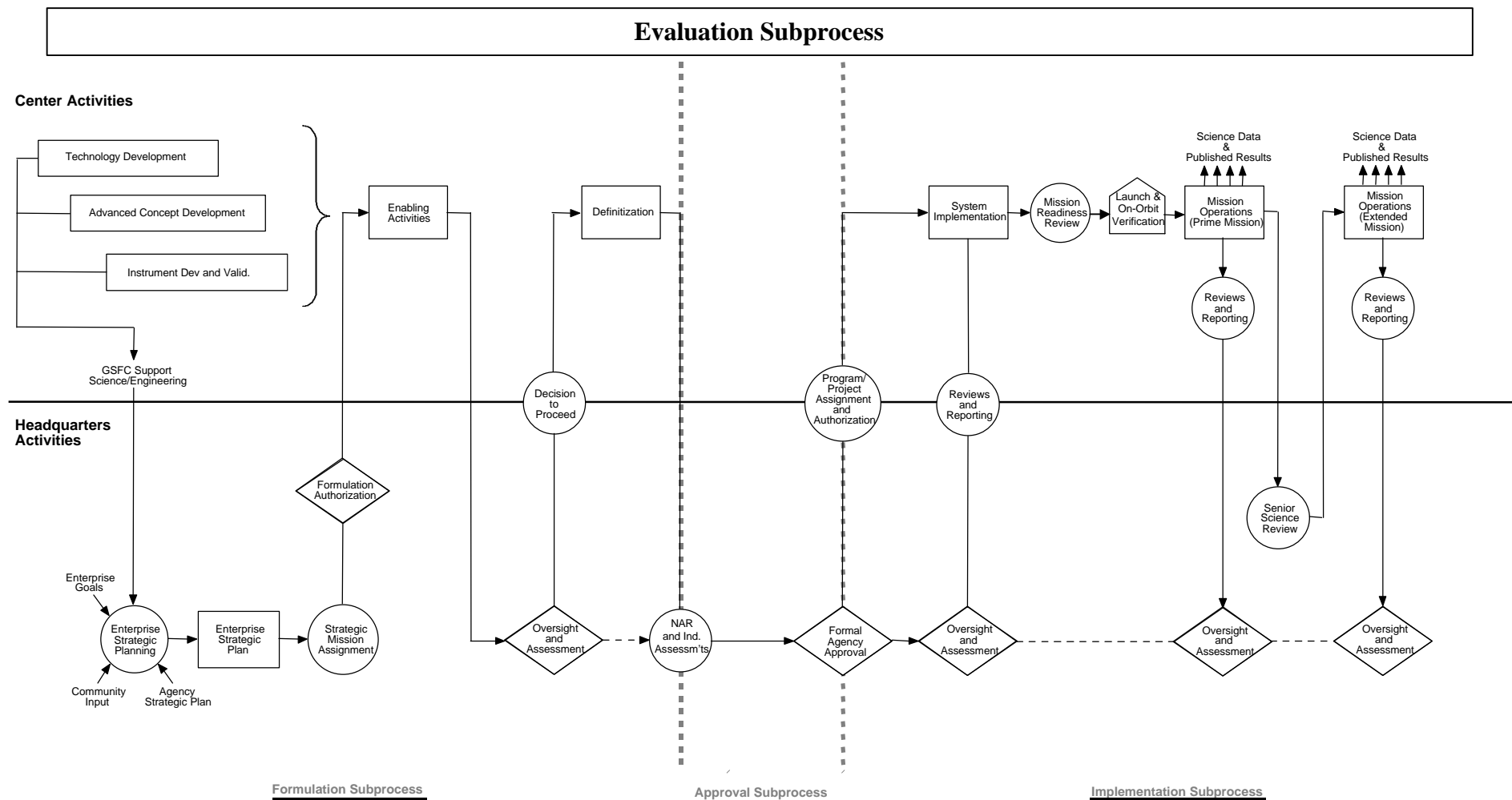


**Table 2. (Continued)**

Program Phase	HQ	Center		
		DD/ACD	STAAC/FPD	
Community Defined/Strategic Missions				
<ul style="list-style-type: none"><li>Definitization</li></ul>	<ul style="list-style-type: none"><li>Oversight and Assessment</li><li>Enterprise Direction Consistent with Evolving Strategic Plan</li><li>Provide Budget and Supporting Resources</li><li>Issue AO's and Select Winning Proposal(s)</li><li>Sponsor an Independent Assessment (if requested)</li><li>Prepare PCA</li></ul>	<ul style="list-style-type: none"><li>Provide Continuing Interface with HQ</li><li>Provide Top Level Definitions and Guidance to Mission Teams and Facility Science Teams</li><li>Coordinate Monthly Status Reviews</li><li>Budget Guidelines</li><li>Provide Problem Resolution</li><li>Provide input and guidance for AO's</li><li>Support Independent Assessment</li><li>Execute Partnership Agreements</li></ul>	<u>700/PFM</u> <ul style="list-style-type: none"><li>Perform Preliminary Design and complete Mission Definition</li><li>Conclude Technology Development</li><li>Support Monthly Status Reviews</li><li>Document Mission Requirements and Specifications</li><li>Support Independent Assessment</li></ul>	<u>400/Project Manager</u> <ul style="list-style-type: none"><li>Project Manager Selected by Director of FPD in Consultation with Director of STAAC and with the Concurrence of the Center Director</li><li>Support Preparations of PCA</li><li>Involve Customer(s)</li><li>Develop Program/Project Plan</li><li>Develop and Advocate Implementation Budget/POP</li><li>Finalize Acquisition Strategy</li><li>Develop Procurement Package</li><li>Draft Partnership Agreements (e.g., Space Act Agreements)</li><li>Support preparation of AO's</li><li>Organize Center participation in NAR</li></ul>
Approval	<ul style="list-style-type: none"><li>Sponsor a NAR</li><li>Approval Decision</li></ul>	<u>DD/ACD Lead</u> <ul style="list-style-type: none"><li>Interface with HQ and Provide Center Advocacy</li><li>Execute partnership agreements</li></ul>	<u>400 Lead</u> <ul style="list-style-type: none"><li>Support the NAR</li><li>Consider Request(s) for Independent Assessments</li><li>Provide Materials and Briefings Necessary for Approval</li><li>Formalize Partnerships</li></ul>	

**Table 2. (Continued)**

Program Phase	HQ	Center	
		DD/ACD	STAAC/FPD
Community Defined/Strategic Missions			
<b>Implementation</b> <ul style="list-style-type: none"><li>Final Design, Development, Test and Evaluation, and On-Orbit Verification</li></ul>	<ul style="list-style-type: none"><li>Program/Project Authorization and Assignment</li><li>Oversight and Assessment</li><li>Review and Accept MRR Letters</li></ul>	<b><u>DD Lead</u></b> <ul style="list-style-type: none"><li>Receive Authorization and Delegate Work to Center/Code 400</li><li>Maintain Communication with Enterprise and GSFC Management and stabilize environment for Program/Project Managers</li><li>Coordinate Monthly Status Reviews and Address Issues as Appropriate</li><li>Coordinate MRR and Prepare Mission Readiness Certification Letter for Directors Signature</li></ul>	<b><u>400 Lead</u></b> <ul style="list-style-type: none"><li>Establish Program/Project Office as Required</li><li>Initiate Continuous Customer Involvement</li><li>Develop, Maintain, and Advocate Program/Project Budget through POP Process</li><li>In Concert with Code 600 or 900, Identify and Appoint a Project Scientist</li><li>Ensure QMS Compliance</li><li>Initiate Contracts and Manage Development</li><li>Provide Weekly Reports to HQ</li><li>Provide Monthly Status Briefings to Goddard PMC</li><li>Ensure Program/Project and Independent Verification and Validation</li><li>Support MRR</li><li>Launch Mission and Perform On-Orbit Verification</li></ul>
<ul style="list-style-type: none"><li>Operations Activity</li></ul>	<ul style="list-style-type: none"><li>Oversight and Assessment</li><li>Coordinate Senior Reviews to Prioritize Funding for Extended Missions</li></ul>	<b><u>DD Lead</u></b> <ul style="list-style-type: none"><li>Coordinate Monthly Status Reviews and Address Issues as Appropriate</li></ul>	<b><u>400 Lead</u></b> <ul style="list-style-type: none"><li>Monthly Status Reports to Goddard PMC</li><li>Weekly Status Reports to HQ</li></ul>



**Figure 3. Overview of PAPAC Process for Community Defined/Strategic Programs and Projects**

### 2.3.1 SUPPORT TO CENTER MANAGEMENT FUNCTIONS

The Program Manager is responsible for providing the necessary support to the following Centerwide management functions:

- a. Center manpower allocation
- b. Budget generation
- c. Status review process
- d. Independent technical review process
- e. Personnel management, including the Center awards and promotion processes.

### 2.3.2 PROGRAM FORMULATION

Program Formulation is the PAPAC subprocess that defines a program concept and plans to meet program objectives through one or more projects, including budget, schedule, and technology goals, as specified in the respective Enterprise Strategic Plan, the NASA Strategic Plan and the Goddard Strategic Implementation Plan. The Program Formulation is led initially by the appropriate PIM within the Office of the OACD. Once a program budget line is approved within the NASA budget, the Program Manager is appointed and leads the definitization of the Program (within the Formulation Subprocess). Primary outputs of the subprocess are the Program Plan, which documents the program's approach to satisfaction of requirements, including tailoring decisions, and the PCA. Process tailoring may take the following forms:

- a. For NASA processes, tailoring requires compliance with the process as described or addressing specific requirements and how they are satisfied in accordance with NPG 7120.5.
- b. For Goddard procedures, flexibility to tailor procedures is addressed within the applicable directive. Therefore no additional tailoring is possible unless otherwise permitted through an approved deviation procedure.

The Program Formulation Subprocess shall conform to and/or address the processes and activities described in NPG 7120.5 and shall normally result in at least the following additional plans:

- a. System Plan
- b. Technology Requirements Plan
- c. Technology and Commercialization Plan
- d. Operations and Business Plan
- e. Infrastructure and Upgrades Plan
- f. Capture Process Knowledge Plan

### 2.3.3 PROGRAM APPROVAL

The Program Manager obtains the approval of the EAA or designee to enter the Program Approval Subprocess. The Program Manager obtains the commitment of Center resources from the New Business Committee (NBC) (see GPG 1310.1) for inclusion in the proposed Program Plan. The Program Manager

initiates a directorate level review of the proposed program prior to the Goddard PMC Review or Gateway Review. The Program Manager presents the proposed Program Plan and the supporting information to the Governing PMC (which may be the Goddard PMC). In support of the Program Manager and the Governing PMC Review, the Evaluation Subprocess provides independent evaluation results to the Governing PMC in the form of NAR results and Independent Assessments (IA's), if performed. Based on the Governing PMC review and recommendation, the Program Plan is presented by the EAA or designee to the NASA PMC and the Administrator. The NASA Administrator is the only authority for approval of a new program. Projects within the program are formally approved by a change to the Program Plan (see NPG 7120.5). Approved Program and Project Plans shall be maintained in the Goddard Directives Management system as "PGs." Sensitive data must be removed before submission to the Center Directives Manager.

### **2.3.4 PROGRAM IMPLEMENTATION**

Program Implementation is the PAPAC subprocess that develops, tests and delivers verified and validated products and services to the customer(s) through the program's projects. The Program Implementation Subprocess shall conform to and/or address the processes and activities described in NPG 7120.5, maintaining current plans and establishing required quality records.

### **2.3.5 PROGRAM EVALUATION**

NASA, through the Independent Program Assessment Office (IPAO) and the Chief Engineer, conducts independent assessments as required by NPG 7120.5 and defined in the Program Plan, including tailoring of evaluation processes to meet program needs.

## **2.4 QUALITY RECORDS**

See GPG 1060.2, Management Review and Reporting for Programs and Projects, for quality records applicable to the Goddard management review and reporting process. Status reviews and reports may be accumulated and maintained by the Goddard PMC as Quality Records.

Programs shall identify, maintain and control selected Program/Project records as Quality Records (GPG 1440.7, Control of Quality Records) when they:

- a. indicate product compliance with customer's specifications or other requirements, and/or
- b. indicate effectiveness of Quality System elements, such as non-conformance reports and subsequent closures.

The following records, are to be considered for identification and maintenance as objective evidence for Quality Records:

- a. Selection Letter, Code 100
- b. Center Assignment Letter, Code 100
- c. Level I Requirements, Program Office
- d. Program Plan, Program Office

- e. Confirmation Letter where appropriate, Code 100
- f. Mission Success Criteria, Code 100
- g. Mission Readiness Certification Letter, Code 100
- h. Formulation Authorizations, Code 100
- i. Annual Theme Reports, Code 100
- j. Announcement of Opportunities (AOs), Code 100

### ACRONYM LIST

ACD	Associate Center Director
AO	Announcement of Opportunity
Co-I	Co-Investigator
DD	Deputy Director
DDT&E	Design, Development, Test and Evaluation
FPD	Flight Projects Directorate
HQ	Headquarters
IPAO	Independent Program Assessment Office
MRR	Mission Readiness Review
NBC	New Business Committee
NRA	NASA Research Announcement
OACD	Office of the ACD
PAPAC	Provide Aerospace Products and Capabilities
PCA	Program Commitment Agreement
PDR	Preliminary Design Review
PI	Primary Investigator
PMC	Program Management Council
P/M/Is	Projects/Missions/Investigations
QMS	(Goddard) Quality Management System
SRR	System Readiness Review
STAAC	Systems, Technology, and Advanced Concepts
STDT	Science and Technology Definition Teams
TMCO	Technical, Management, Cost, and Other factors



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Page 21 of 21

### CHANGE HISTORY LOG

Revision	Effective Date	Description of Changes
Baseline	4/26/1999	Minor changes were made to include design planning during implementation, expansion of the tailoring concept for both NASA and GSFC directives and editorial changes.
Minor Change	5/07/1999	Modify 2.4 to remove Original Proposal, Code 100 from list of Quality Records
A	08/09/99	This is an ADMINISTRATIVE REVISION only. The revision is required to bring document in line with GPG 1410.1, <b>2.7 Revising Directives</b> , that states: "When a revision is necessary, substantive or non-substantive, the entire directive must be reissued in accordance with the process for issuing new directives described in this GPG."